

# **Exhibit 3**



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# Meet with ViVitro Labs at HVS 2023

March 20th, 2023

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(<https://heartvalvesociety.org/meeting/>)

HVS is an international and multi-disciplinary society which offers global members and attendees education and training in all aspects of heart valve disease and treatment. HVS 2023, the 2023 Scientific Meeting, will be held March 29 thru April 1, 2023 at the Hotel IPV Palace in Malaga, Spain.

*Connect with Jérémie Decressac (<mailto:jdecressac@vivitrolabs.com>), ViVitro Labs Business Development Manager, Europe, Africa, Israel, at HVS 2023 to discuss your cardiovascular device testing and engineering challenges.*

**Name \***

First

Last

**Organization**

**Email \***

**What would you like to discuss in our meeting? \***

**Multiple Choice**

- ☐ Wednesday, March 29
- ☐ Thursday, March 30
- ☐ Friday, March 31
- ☐ Saturday, April 1

Request Appointment

**ViVidro Labs Heart Valve Durability Tester with ADC™ technology**



## ***ViVitro Labs Heart Valve Durability Tester with ADC™ technology offers greater accuracy, less manual interaction saves time***

ADC automates individual test module stroke and pressure control.

- Dedicated linear electromagnetic motor utilizes position feedback for consistent heart valve opening.
- By-pass restrictor with patented control algorithm automatically maintains valve differential pressure.
- Continuous real-time data analysis counts every ISO cycle and yields 0% count error.

A prewired controller unit and data acquisition system accommodates any combination of up to 6 test modules.

Transparent customizable test chambers are designed for maximum flexibility to fit any valve size and geometry with optimum inflow, outflow, and lateral visibility on test samples.

ViVitro's Heart Valve Durability Tester with ADC Technology has independent test modules that enable fast, easy interchangeability of test samples and system components with minimum disruptions to adjacent on-going test modules.

Automatic Dual Control technology maintains valve loading conditions throughout the entire test for up to 6 individually controlled chambers.

Flow Loop System autonomously runs under a low hydrostatic pressure head, which decreases the load on all seals and bellows. No external pressure source or compressor is required.

Contact us (<https://vivitrolabs.com/contact/>) to learn more about the Heart Valve Durability Tester with ADC Technology and how ViVitro can help you meet your cardiovascular device testing needs.



([https://vivitrolabs.com/wp-content/uploads/2022/09/ADC-](https://vivitrolabs.com/wp-content/uploads/2022/09/ADC-Heart-Valve-Durability-Tester_Brochure.pdf)

[Heart-Valve-Durability-Tester\\_Brochure.pdf](https://vivitrolabs.com/wp-content/uploads/2022/09/ADC-Heart-Valve-Durability-Tester_Brochure.pdf))

## ViVitro Pulse Duplicator system



The ViVitro Pulse Duplicator system is the world's most widely cited and most used in-vitro cardiovascular hydrodynamic testing system.

The ViVitro Pulse Duplicator simulates the function of the heart (left or right) by generating pulsatile flow through prosthetic heart valves placed in the Model Heart (Left or Right). Powered by the ViVitro SuperPump pulsatile pump, it is composed of the ViVitro Model Heart (Left or Right), SuperPump pulsatile pump (<https://vivitrolabs.com/product/superpump/>), Flow Measuring System and ViViTest data acquisition system (<https://vivitrolabs.com/wp-content/uploads/2014/06/ViVitro-Data-Acquisition-Software.pdf>). The components work together to assess the performance of prosthetic heart valves under simulated cardiac conditions. The ViVitro Pulse Duplicator System is used by the US Food and Drug Administration and is recognised and used by regulatory bodies worldwide including TÜV, BSI and Chinese CFDA.

The Pulse Duplicator System assesses the performance of cardiovascular devices and prosthetic heart valves under simulated cardiac conditions. It simulates physiological or other complex flow variations while allowing the user to vary the peripheral resistance and compliance of the system. Pressure ports and flow measuring locations allow for data to be collected from aortic or mitral sites. Transparent viewpoints allow multiple viewing angles of the valve including inflow and outflow.

Combined with the ViVitest software control system, it quickly, easily and reliably collects and analyzes physiological flow and pressure data. The ViVitest software also allows the user to easily modify and customize waveforms.

**View ViVitro Pulse Duplicator web page.**

**The ViVitro Pulse Duplicator System is cited in numerous research studies throughout the world. Visit our Citation Database (<https://vivitrolabs.com/company/cited-publications/?filter=pulse-duplicator>) for the current list of applications and articles.**



([https://vivitrolabs.com/wp-](https://vivitrolabs.com/wp-content/uploads/2016/02/1764_ViVitro_SalesSheetJuly2018_PulseDuplicator.pdf)

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# Cardiovascular Device Testing Services (<https://vivitrolabs.com/services/>)



(<https://vivitrolabs.com/services/>)

ViVitro Labs offers cardiovascular device testing services as either ISO 17025:2017 accredited or non accredited to help device manufacturers meet the highest standards in the industry in support of regulatory submissions.

*Connect with Jérémie Decressac ([mailto: jdecressac@vivitrolabs.com](mailto:jdecressac@vivitrolabs.com)), ViVitro Labs Business Development Manager, Europe, Africa, Israel, at HVS 2023 to discuss your cardiovascular device testing and engineering challenges.*

Join over 5000 cardiovascular device professionals who receive our testing and engineering insights and tips every month.

email address

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# VIVITRO ADC™ HEART VALVE DURABILITY TESTER



Vivitro ADC Heart Valve Durability Tester  
- 6 test module configuration

*Information and images are accurate as of publication, but subject to change.*

## **Automatic Dual Control Technology (ADC)** **Greater accuracy, less manual interaction saves time**

ADC automates individual test module stroke and pressure control.

- Dedicated linear electromagnetic motor utilizes position feedback for consistent heart valve opening.
- By-pass restrictor with patented control algorithm automatically maintains valve differential pressure.
- Continuous real-time data analysis counts every ISO cycle and yields 0% count error.

A prewired controller unit and data acquisition system accommodates any combination of up to 6 test modules.

Transparent customizable test chambers are designed for maximum flexibility to fit any valve size and geometry with optimum inflow, outflow, and lateral visibility on test samples.

ViVitro ADC Heart Valve Durability Tester independent test modules enable fast, easy interchangeability of test samples and system components with minimum disruptions to adjacent on-going test modules.

Automatic Dual Control technology maintains valve loading conditions throughout the entire test for up to 6 individually controlled chambers.

Flow Loop System autonomously runs under a low hydrostatic pressure head, which decreases the load on all seals and bellows. No external pressure source or compressor is required.

ViVitro ADC Heart Valve Durability Tester meets ISO 5840 AWT, DFM test requirements for all valve types and designs including: transcatheter and surgical valves: aortic, mitral, pulmonary and tricuspid valve technologies, biological tissue valves, rigid metallic or polymeric and soft polymeric valve technologies.

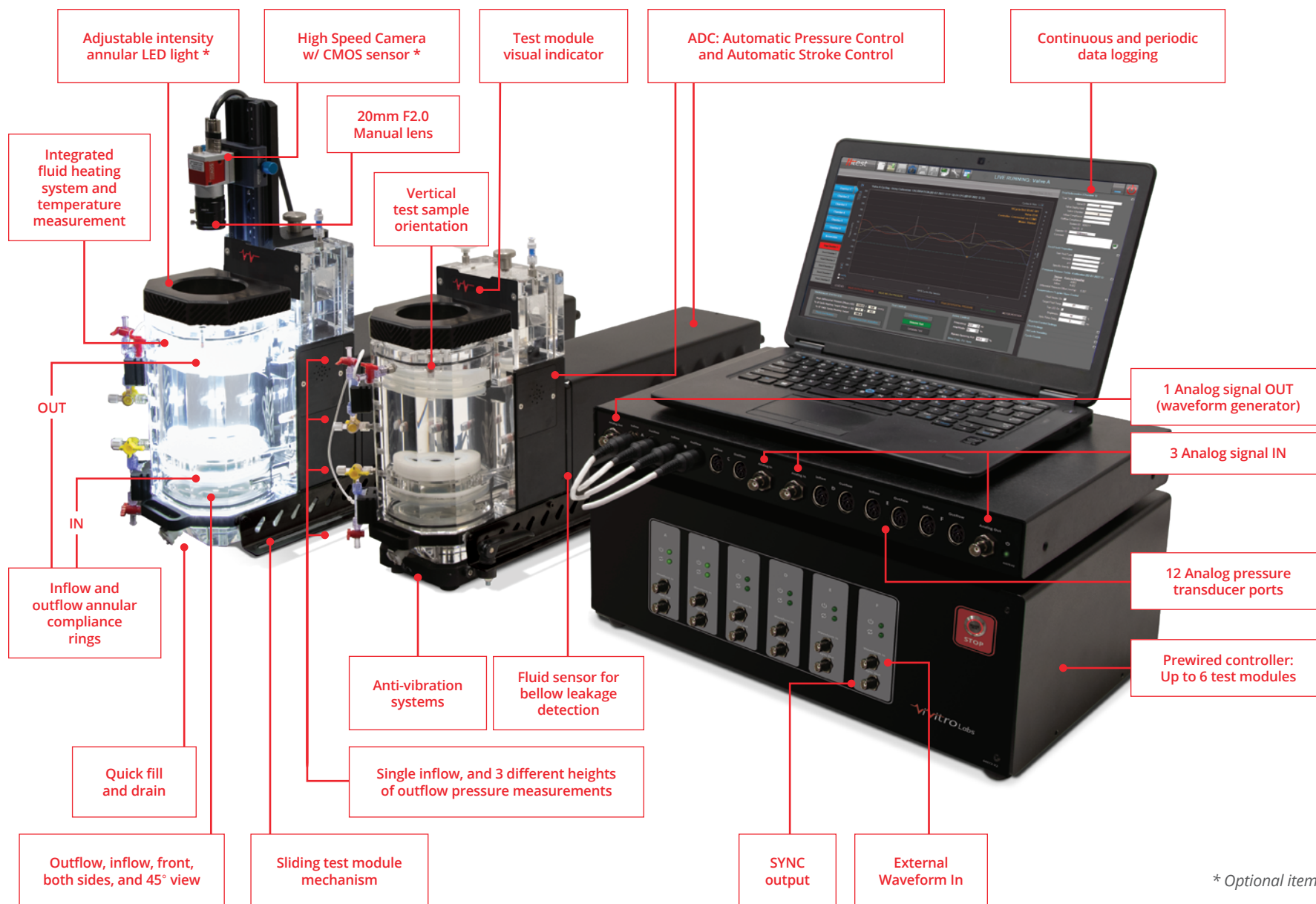
ViVitro ADC Heart Valve Durability Tester can be used to assess cardiac valve repair devices, transcatheter cardiac occluders, and cardiac implant devices.

## More ViVitro ADC Heart Valve Durability Tester Features

- True independent test modules with no fluid connections and dedicated electronics including linear electromagnetic motors, automated by-pass control, and temperature measurement.
- Automatic control system maintains optimum valve loading conditions during accelerated wear or real time testing.
- Large, customizable test chamber design fits all valve sizes and geometry and accommodates supporting structure(s).
- Modular system optimizes part and component interchangeability.
- Standalone architecture eliminates neighboring module disruptions.
- Vertical test sample configuration minimizes gravity effects on valve leaflets, leading to symmetric wear.
- Valve holder design facilitates chamber seal integrity.
- Integrated anti-vibration systems minimize pressure signal disruptions and improve high speed video quality.
- Inflow and outflow chamber annular compliance rings optimize differential pressure waveforms.
- Independent heater and temperature sensors each test module and corresponding test valve.
- Adjustable intensity annular LED light delivers maximum high-speed imaging luminosity with minimal reflection impact.
- Customizable valve annulus ring fits all valve geometries.
- Adjustable outflow pressure sensor height accommodates different valve designs, including valves in conduits.
- Pressure design features low system mean (approx. 10 mmHg) for load reduction and increased lifespan of seals and bellows. No external pressure source or compressor required.
- Camera holder ensures repeatable high-speed camera positioning, increased test image capture quality and reliability between inspection cycles.
- Embedded safety systems include bellows leakage sensor, fluid level detector, temperature change and pressure drop monitoring.
- Sliding test module mechanism provides test sample inflow visualization and ease of servicing.
- Optimum test chamber visibility for image capture in outflow, inflow, front, lateral, and 45° viewing positions.

## ViVitro ADC Heart Valve Durability Tester - 2 test module configuration

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## Specifications

<b>Test module weight:</b>	Empty = 20.6 kg/module Full = 22.1 kg/module
<b>Full Controller and Data Acquisition unit weight:</b>	8.4 kg
<b>Footprint - 6 modules configuration:</b>	Min Bench Length = 1650 mm* Min Bench Depth = 600 mm Height = 362 mm (without Camera) Height = 400 mm (with Camera)
<b>Footprint - 2 modules configuration:</b>	Min Bench Length = 850 mm* Min Bench Depth = 600 mm Height = 362 mm (without Camera) Height = 400 mm (with Camera)
<b>Controller power supply requirements fully loaded:</b>	675 W w/ 6 chambers with controller, 1 light ring, heaters on, at 100 mmHg No DAQ, No PC
<b>System operating frequencies<sup>2</sup>:</b> <small><sup>2</sup> Tested w/ calibrated orifice</small>	1 Hz to 70 Hz <sup>1</sup> <small><sup>1</sup> Test sample behavior and frequency response dependant.</small>
<b>Test chamber diameter</b>	Max support OD: 95 mm
<b>Test chamber height &amp; clearance:</b>	Total Height/clearance up to 113.5 mm
<b>Piston max stroke volume:</b>	38 ml/stroke
<b>Test chamber transparency:</b>	Inflow, outflow, left and right, 1 angle at right 45°
<b>Average hydrostatic pressure head:</b>	10 mmHg

\* Minimal distance between units: 30 mm



**ViVITRO ADC Heart Valve Durability Tester  
- 1 test module configuration**

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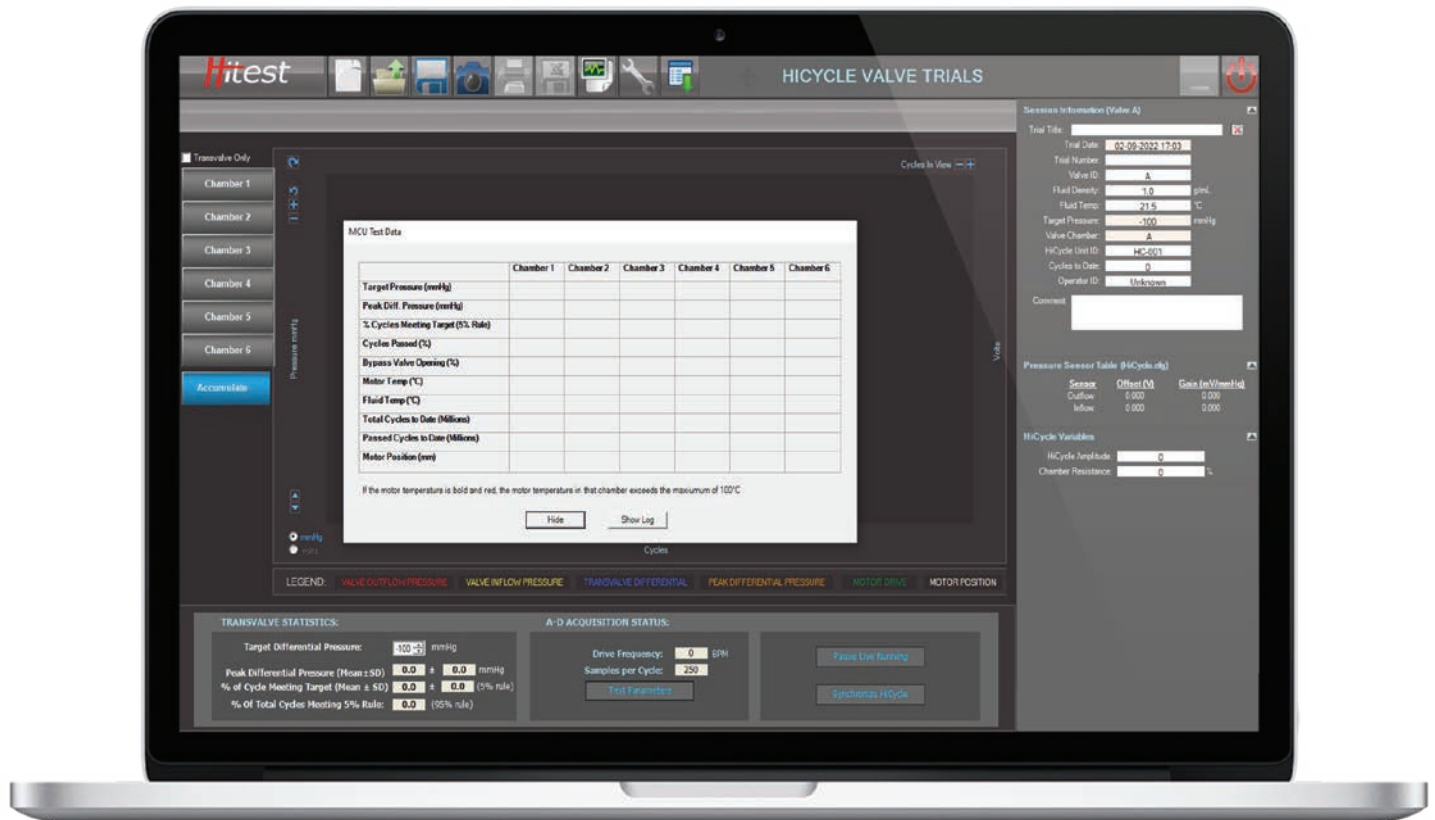
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## Software

The ViVITRO ADC Heart Valve Durability Tester with Automatic Dual Control Technology uses a proprietary software platform with a user- friendly interface. All in-software allows individual control of each test module.

## Features

- Independent settings and controls for each test module, including stroke amplitude, fluid bypass control for differential pressure adjustment, test frequency, temperature, and many more
- Fully software-controlled system requires no manual adjustments
- Continuous and/or periodic data monitoring records ISO 5840 conformance as required for AWT and DFM
- Easy control and settings navigation between test modules
- Integrated pressure calibration wizard
- Waveforms display for inflow outflow pressure, differential pressure
- Individual test module parameters display windows show passing cycles count, operating frequency, fluid temperature, peak to peak differential pressure, "% cycle pass, % pressure pass, and total number of passing cycles
- Test sample identification data embedded in test log with calibration values



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## Continuous data log mode

Cycle to cycle information (peak differential, % of cycle meeting target pressure) can be collected for a predefined periods of time and saved over multiple .CSV files. Data is recorded in engineering units.

## Period data log mode

- Fixed number of cycles captured
- Periodic data report automatically generated based on user predefined parameters:
- Ability to periodically save entire waveform with user(s) defined output data (inflow and outflow waveforms minimum capture, and other test parameters)
- User-friendly field selector for output data

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